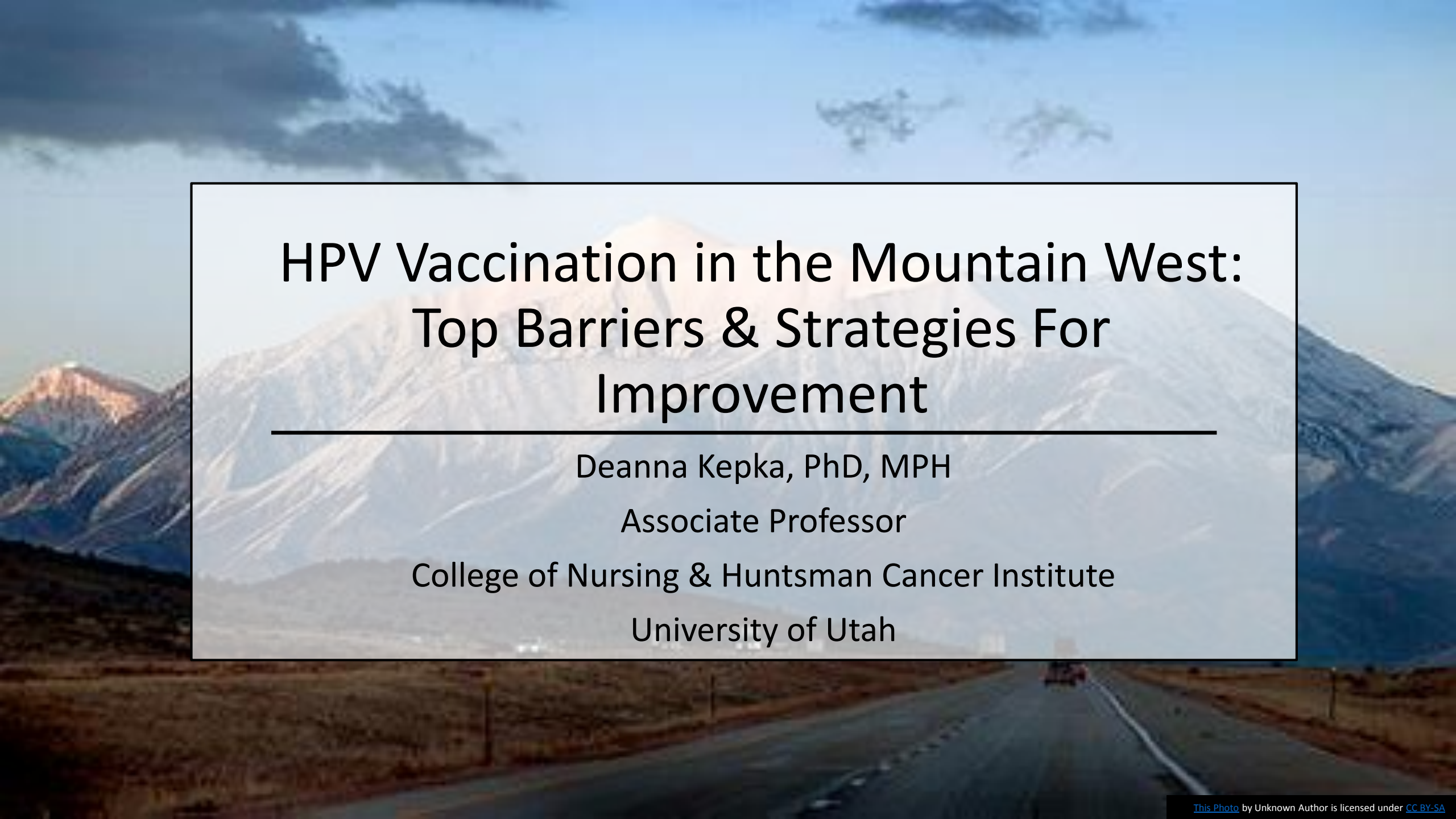


HPV Vaccination in the Mountain West: Top Barriers & Strategies For Improvement

Deanna Kepka, PhD, MPH

Associate Professor

College of Nursing & Huntsman Cancer Institute

University of Utah

I do not have any conflicts of interest to disclose.

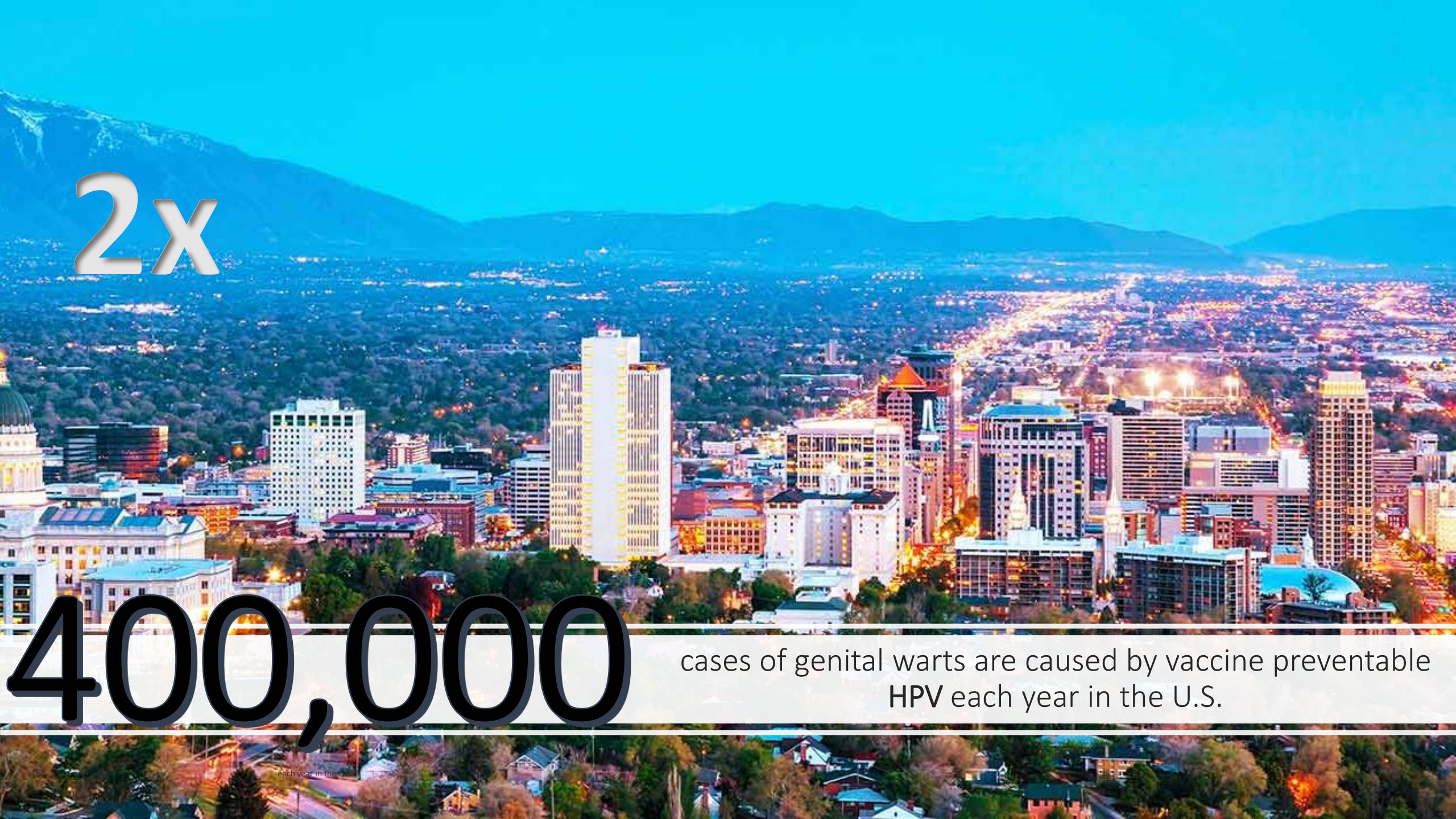
-Deanna Kepka

Objectives

- Present overview of HPV, HPV cancers, and HPV vaccination
- Summarize HPV vaccination rates among female and male teens in the Mountain West
- Identify evidence-based strategies to improve HPV vaccination in primary care settings
- Describe common barriers to HPV vaccination in the Mountain West

33,000

Cancers are caused by vaccine preventable **HPV** each year in the U.S.


2x
400,000
cases of genital warts are caused by vaccine preventable HPV each year in the U.S.
each year in the U.S.

At Least 10% of all Women Experience an Abnormal Pap

Nearly all abnormal pap tests are caused by vaccine preventable **HPV:**

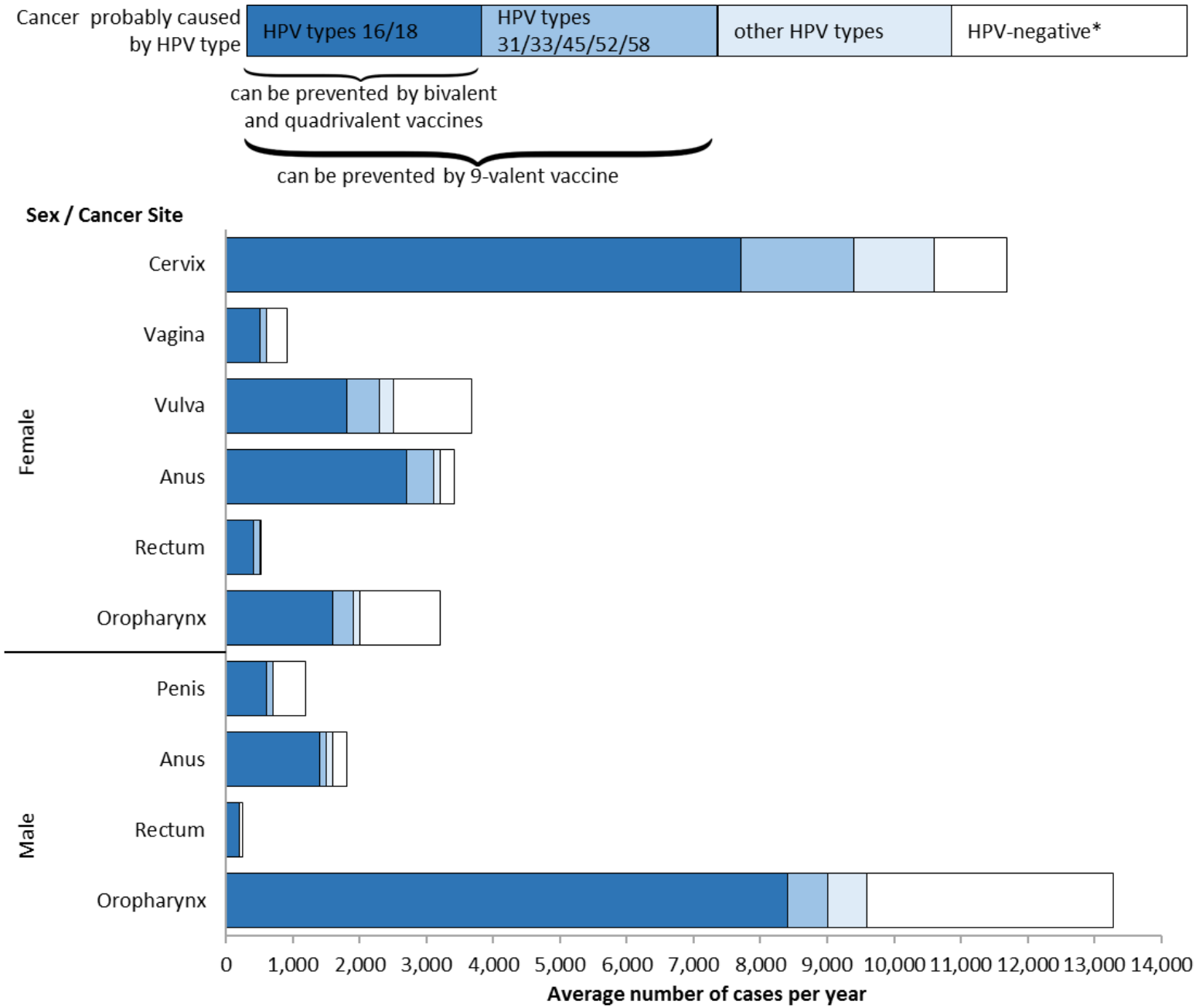
1.4 million new cases low-grade

+

330,000 new cases high-grade

cervical dysplasia (1 in 10 women)

HPV-Associated Cancers per Year, United States, 2009–2013



WOMEN & MEN

Who has HPV?

I DO

You DO

We DO

Nearly ALL of US

HAVE HAD or

WILL HAVE HPV

HPV is a common virus that infects men and women

80%

of people will get an HPV infection in their lifetime

Most HPV infections will go away on their own. Infections that don't go away can cause precancers and cancers.

1 in 4 of Us Today

How do I know if I have HPV?

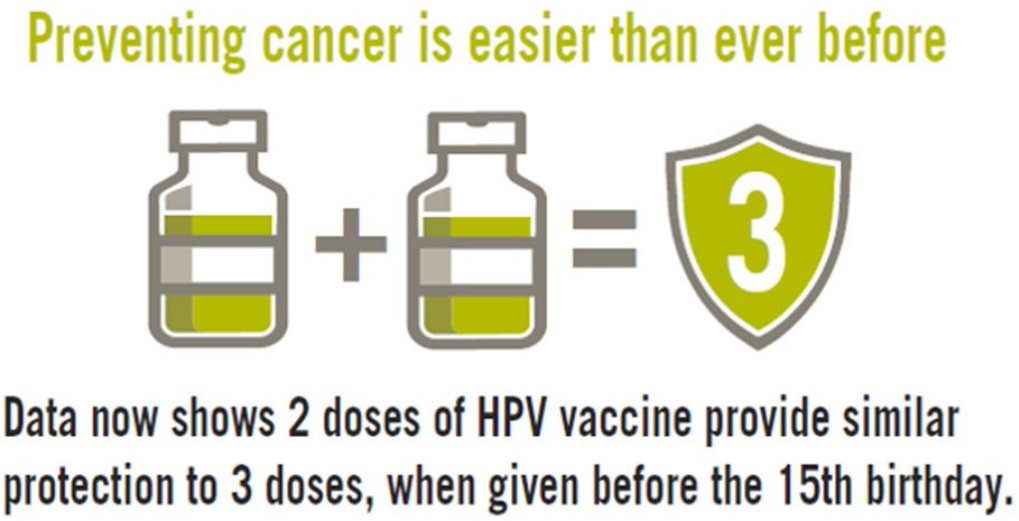
HPV OFTEN HAS

NO SIGNS OR SYMPTOMS.

ANYONE WHO IS INFECTED CAN PASS THE VIRUS ON WITHOUT EVEN KNOWING IT.

HOW can we prevent cancer-causing HPV infections?

Receive **2 DOSES** of the HPV Vaccine
at ages 11-12 years for boys & girls



2019 Updated HPV Vaccination Recommendations

TABLE 1

HPV vaccination timeline, male and female

Age 9–14	Age 15–26	Age 21–26 (male)	Age 27–45
2-dose HPV vaccine, 0 and 6–12 months	3-dose HPV vaccine, 0, 1–2, and 6 months	Vaccine offered, 3-dose regimen	FDA-approved, but not routinely recommended

FDA = US Food and Drug Administration; HPV = human papillomavirus

October 3, 2018

Human papillomavirus (**HPV**) **vaccine coverage in Australia is 80% for females and 76% for males.**

By 2028, fewer than **4 women per 100,000** will have cervical cancer.

By 2066, less than **1 women per 100,000** will have cervical cancer.

According to the Cancer Council Australia, the vaccination has led to **a 77% reduction** in the types of HPV most responsible for cervical cancer.

Australia now has one of the lowest cervical cancer incidence and mortality rates in the world.

The New York Times

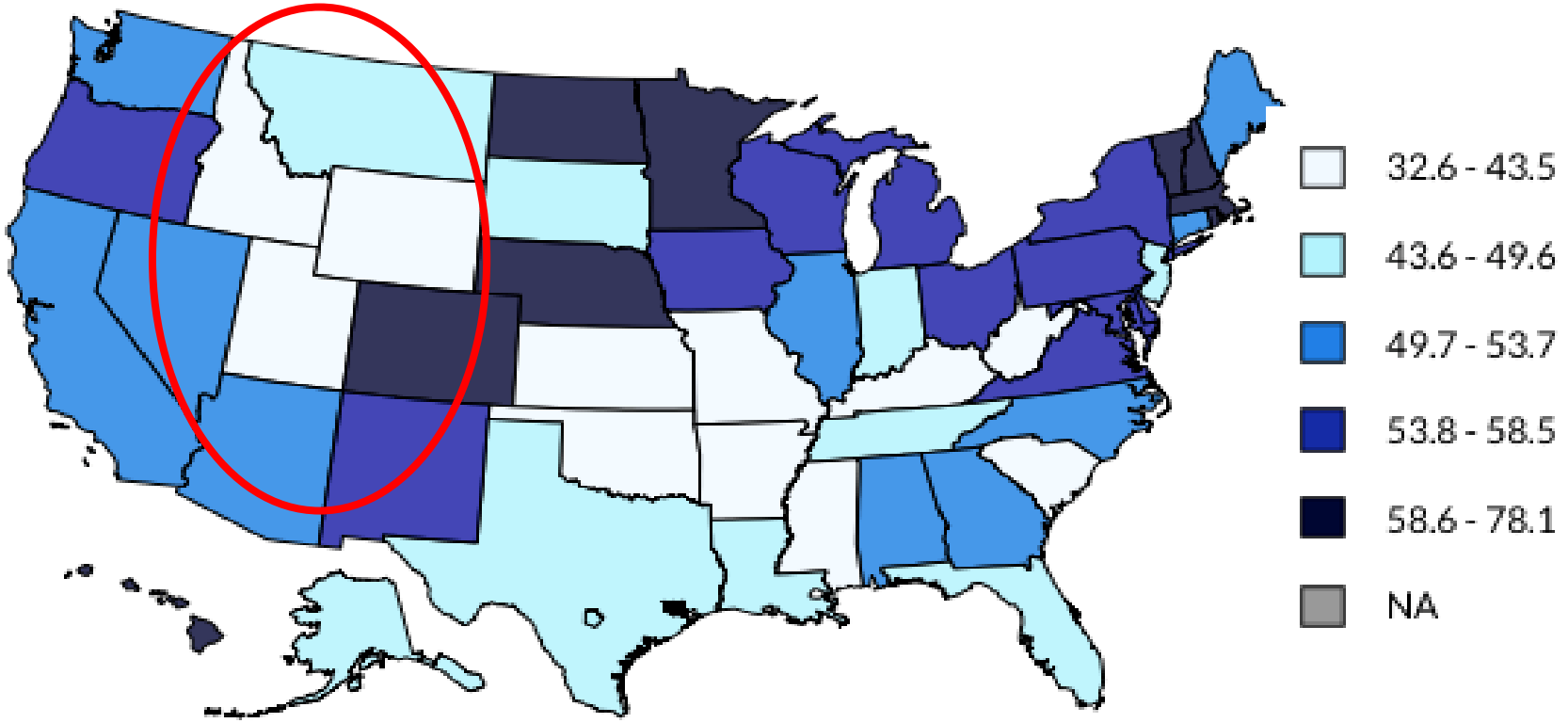
In Australia, Cervical Cancer Could Soon Be Eliminated

HPV Vaccination Up-to-date (%), Girls & Boys, Ages 13-17 years, NIS-Teen 2018

How is the U.S. Doing with HPV Vaccination?

U.S. Up to Date HPV Vaccination Rates:

All –	**51%** of ages 13-17 years (2018)
All –	**49%** of ages 13-17 years (2017)
All –	**43%** of ages 13-17 years (2016)
By gender –	Girls 53.7% vs. Boys 48.7% (2018)



How are Wyoming's HPV Vaccination Rates?

42% of Teens are Up-to-Date in Wyoming – State NUMBER 46 out of 50 U.S. States

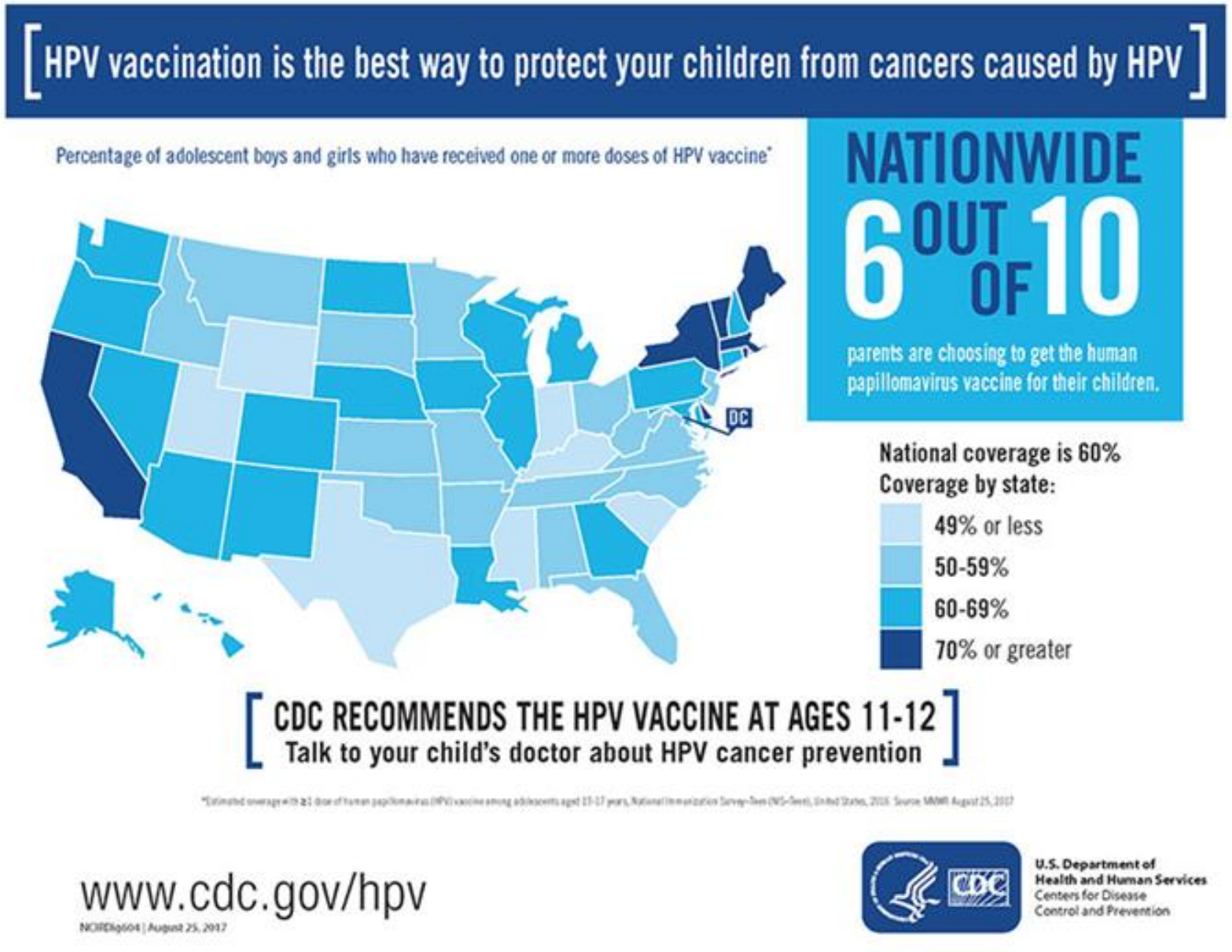
54% of Female Teens are Up-to-Date in Wyoming – State NUMBER 24 out of 50 U.S. States

30% of MALE Teens are Up-to-Date in Wyoming – State NUMBER 49 out of 50 U.S. States

NIS TEEN 2018 Data

Wait, I thought this was a….

- Safe and Effective **CANCER PREVENTION Vaccine**
- Protection against **9 HPV types**
- **10+ Years Recommended**



LOCATION MATTERS

<u>Where you live</u> has a huge impact on whether or not you receive the HPV vaccine.

HEALTH

Rural-urban gap in some vaccination rates leaves health officials puzzled

By HELEN BRANSWELL @HelenBranswell / AUGUST 24, 2017

A nurse in Marietta, Ga., administers a dose of the HPV vaccine.

HPV Vaccination in the Mountain West

- ❖ Mountain West (MW) states have some of the lowest HPV vaccination rates in the US
- ❖ MW teens living in rural regions of Colorado, Montana, Nevada, Utah, and Wyoming were less likely to receive at least one dose of the HPV vaccine than their urban counterparts
- ❖ The Healthy People 2020 target for HPV vaccination completion among teens ages 13-15 years is 80%
  - Less than 50% of teens have met this target

NIS-Teen 2018 HPV Vaccination Rates by Metropolitan Status, Ages 13-17 years			
FEMALES	1-dose	2-dose	3-dose
U.S. Average	**69.9%**	**57.4%**	**37.9%**
MSA Central City – URBAN	73.0	60.6	40.2
MSA Noncentral City – SUBURBAN	68.2	56.2	37.0
Non MSA – RURAL	65.1	50.6	33.5
MALES	1-dose	2-dose	3-dose
U.S. Average	**66.3%**	**52.8%**	**32.1%**
MSA Central City – URBAN	70.9	59.0	35.6
MSA Noncentral City – SUBURBAN	65.0	50.1	30.8
Non MSA – RURAL	53.9	39.0	23.3

MSA = Metropolitan Statistical Area
Yellow color=below national averages

Year	1 dose or more both genders	Up-to-date both genders	1 dose or more FEMALE	1 dose or more MALE	Up-to-Date Urban MALE	Up-to-Date Rural MALE	Up-to-Date Urban FEMALE	Up-to-Date Rural FEMALE
Utah								
2017	58.8 (+/- 6.1%)	37.4 (+/- 6.1%)	63.1 (+/- 8.9%)	54.7 (+/- 8.4%)	41.9 (+/- 16.1%)	NA	48.9 (+/- 16.6%)	NA
2018	66.7 (+/- 6.2%)	43.2 (+/- 6.9%)	76.7 (+/- 7.6%)	57.2 (+/- 9.3%)	54.9 (+/- 17.7%)	NA	57.6 (+/- 18%)	NA
Montana								
2017	65.5 (+/- 6.3%)	49.1 (+/- 6.7%)	64.5 (+/- 9.4%)	66.4 (+/- 8.4%)	57.0 (+/- 15.9%)	45.2 (+/- 11.3%)	46.6 (+/- 18.8%)	53.7 (+/- 11.6%)
2018	66.4 (+/- 6.5%)	48.4 (+/- 6.8%)	66.5 (+/- 9.4%)	66.2 (+/- 9.0%)	50.0 (+/- 16.5%)	41.4 (+/- 12.1%)	57.7 (+/- 16.2%)	51.2 (+/- 12.2%)
Idaho								
2017	62.4 (+/- 6.5%)	44.1 (+/- 6.6%)	68.4 (+/- 9.2%)	56.7 (+/- 9.0%)	40.2 (+/- 17.6%)	29.1 (+/- 13.4%)	57.3 (+/- 16.5%)	51.8 (+/-17.7%)
2018	63.6 (+/- 6.7%)	43.4 (+/- 6.7%)	67.7 (+/- 9.3%)	59.8 (+/- 9.5%)	42.2 (+/- 16.5%)	26.3 (+/- 12.0%)	60.4 (+/- 20.2%)	49.1 (+/- 15.5%)

MW NIS-TEEN DATA BY STATE

Up-To-Date 2018

Female US Average – 53.7%

Male US Average – 48.7%

Both genders – 51.1%

*yellow color = below national averages

Year	1 dose or more both genders	Up-to-date both genders	1 dose or more FEMALE	1 dose or more MALE	Up-to-Date Urban MALE	Up-to-Date Rural MALE	Up-to-Date Urban FEMALE	Up-to-Date Rural FEMALE
Nevada								
2017	64.9 (+/- 6.3%)	49.0 (+/- 6.5%)	70.6 (+/- 8.5%)	59.3 (+/- 9.1%)	46.1 (+/- 10.8%)	NA	52.9 (+/- 10.9%)	NA
2018	66.0 (+/- 5.9%)	51.1 (+/- 6.4%)	66.0 (+/- 8.5%)	66.0 (+/- 8.3%)	59.2 (+/- 10.8%)	NA	46.3 (+/- 11%)	NA
Wyoming								
2017	46.9 (+/- 6.2%)	30.9 (+/- 5.7%)	50.0 (+/- 8.9%)	44.1 (+/- 8.6%)	29.5 (+/- 15.8%)	26.0 (+/- 8.4%)	39.9 (+/- 17%)	30.8 (+/- 9.5%)
2018	53.5 (+/- 7.5%)	42.0 (+/- 7.6%)	67.2 (+/- 10.1%)	40.7 (+/- 10.1%)	36.1 (+/- 17.8%)	30 (+/- 11.6%)	64.6 (+/- 18%)	50.6 (+/- 12.7%)

MW NIS-TEEN DATA BY STATE

Up-To-Date 2018

Female US Average – 53.7%

Male US Average – 48.7%

Both genders – 51.1%

*yellow color = below national averages

Rural Barriers to HPV Vaccination

Barriers to HPV Vaccination in Rural Areas

- ❖Strong Provider Recommendation – **LESS Likely**
- ❖Health Care System Challenges – **MORE Difficult**
- ❖Lack of Parent/Patient Knowledge
- ❖Beliefs that it is NOT for ages 11-12 & NOT for boys
- ❖Few visits to primary care provider at this age
- ❖Multiple doses – **TRAVEL for 2+ DOSES**
- ❖Costs – **HIGHER COSTS FOR COLD STORAGE**
- ❖**Availability of HPV Vaccine (refer to health dept).**
- ❖Not framed as a **"Cancer Prevention"** vaccine

Rural Mountain West Cancer-related Challenges

- Rural/frontier populations often experience barriers to accessing health care and clinical trials, as well as adverse outcomes across the entire continuum of cancer prevention to treatment to survivorship.

- In Utah, Rural residents had a five-year relative **survival** that was **5.2% lower than metropolitan residents.**

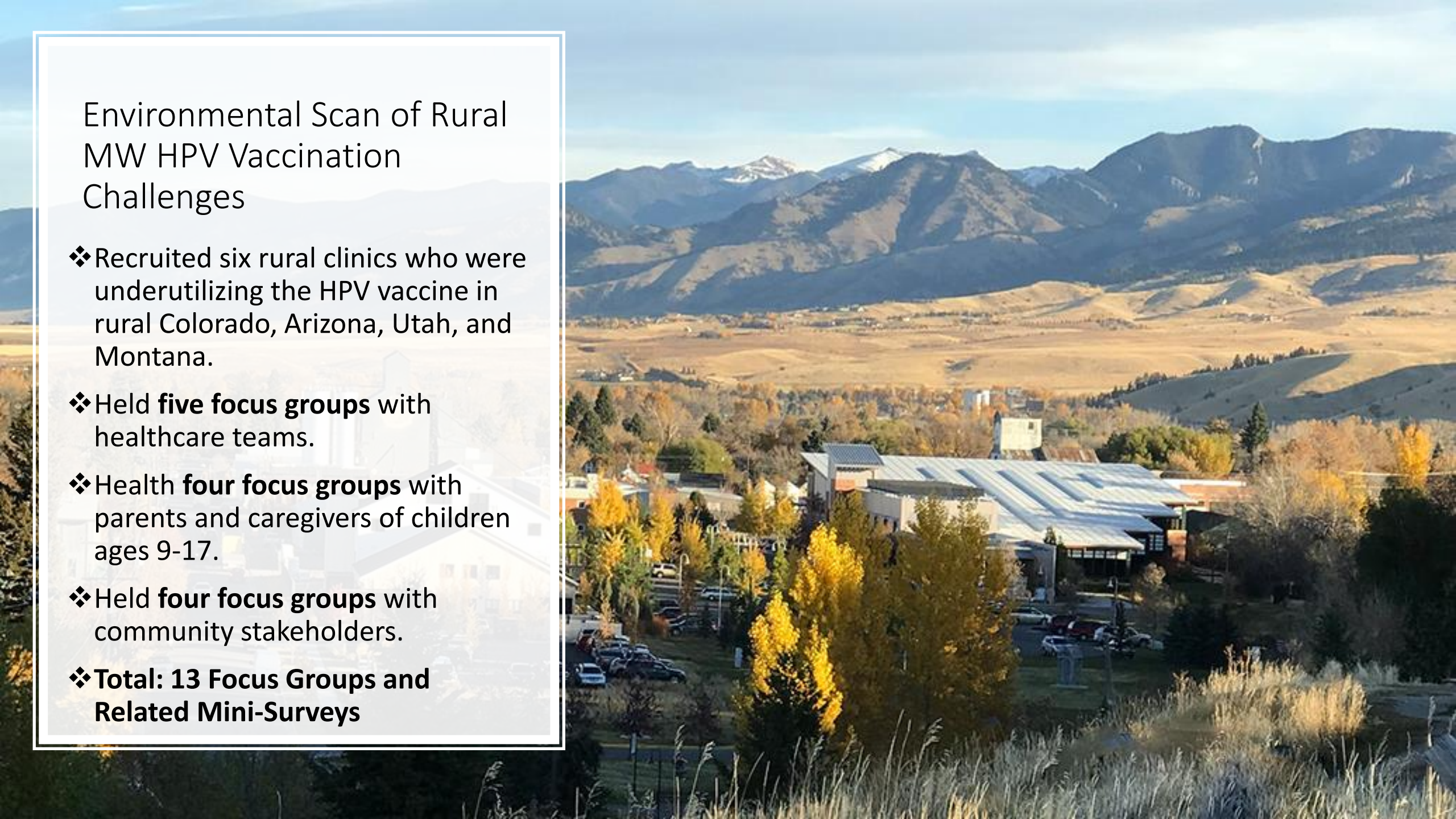
- They also had a **10% increase in risk of death** than metropolitan residents in Utah.

- In Utah, using Utah statewide vaccine registry data, we reported that teens living in small **rural areas were 1.8 times more likely to have a missed opportunity for HPV vaccination than urban residents**.

HUNTSMAN CANCER INSTITUTE UNIVERSITY OF UTAH

Environmental Scan of Rural MW HPV Vaccination Challenges

- Recruited six rural clinics who were underutilizing the HPV vaccine in rural Colorado, Arizona, Utah, and Montana.
- Held **five focus groups** with healthcare teams.
- Health **four focus groups** with parents and caregivers of children ages 9-17.
- Held **four focus groups** with community stakeholders.
- **Total: 13 Focus Groups and Related Mini-Surveys**



What prevents you from getting your child an HPV vaccination:		
Uncertainty about which vaccine my child should receive	12	35.6
Cost of vaccine	7	21.1
Time to clinic	5	15.2
Cost of clinic visit	5	15.2
Scheduling Clinic Appointment	4	12.1
other	3	9.1
Distance to clinic	1	3.03
Wait at Clinic	0	0.0
Transit cost to clinic	0	0.0
Should child get HPV vaccine at rec. age:		
Yes	24	70.6
No	0	0.0
Don't Know	8	23.5
Missing	2	5.9

Child received vaccine:		
Yes	18	52.9
No	15	44.1
Don't Know	1	2.9
How likely to get vaccine if child does not have it:		
Very Likely	7	45.7
Somewhat Likely	1	6.7
Neutral	4	26.7
Unlikely	1	6.7
Very Unlikely	0	0.0
Missing	2	13.3
Not Allow child to get HPV vaccine because:		
No specific reason	1	9.1
Side effects	1	9.1
Not the right age	1	9.1
Costs	1	9.1
Not recommended	0	0.0
I don't vaccinate my children	0	0.0
It is unnecessary	1	9.1
Not enough information	6	54.6
S/he is not sexually active	3	27.3

Table 1a. Demographic Characteristics of Parents

Characteristic	N	%
Age		
18-44	19	55.9
45-64	15	44.1
65+	0	0.0
Relationship to child		
Mother	28	82.4
Grandfather	0	0.0
Father	4	11.8
Other Legal Guardian	0	0.0
Grandmother	1	2.9
Other (Step-mother)	1	2.9

Mountain West Rural Parents/Caregivers

Table 3. Provider Demographics		
	N	%
Profession		
Nurse	26	26.0
Med. Assistant	21	21.0
PA	9	9.0
MD/DO	7	7.0
Nurse Practitioner	6	6.0
Clinic Staff	6	6.0
Administrator	2	2.0
Missing	1	1.0
Resident	0	0.0
Other	22	22.0

Table 4. General Provider Survey Questions		
	N	%
Challenges to administer HPV vaccine:		
1 - Our clinic does not stock the HPV vaccine	5	5.0
2 - Our clinic does not have standing order for the HPV vaccine	8	8.0
3 - Lack of time during clinic visit to discuss about the HPV vaccine	7	7.0
4 - We often do not have records of previous vaccines for the patient	13	13.0
5 - Lack of time to determine whether the patient needs it	3	3.0
6 - Lack of time to determine whether the patient needs a second dose of the HPV vaccine	4	4.0
7 - We do not use the electronic health record to track the HPV vaccine status of patients	2	2.0
8 - We do not have a system to remind providers to talk to patients about HPV vaccine	12	12.0
9 - We do not have a system to remind parents to bring their child back to the clinic to receive the second HPV vaccine in the series	21	21.0
10 - Lack of time during the clinic visit to administer vaccinations	1	1.0
11 - Lack of knowledge and training about the HPV vaccine	5	5.0
12 - Lack of clear recommendations in guidelines	1	1.0
13 - Unconvinced about the efficacy of HPV vaccination	8	8.0
14 - Personal fear of side/adverse effects	8	8.0
15 - unsure of the need for vaccination	3	3.0
16 - Other	16	16.0
17 - I do not expect to encounter any clinic barriers to vaccination	8	8.0

Mountain West Rural Healthcare Team

Urban vs. Rural

Rural clinics:

- ❖ Reported a higher number of challenges that limit HPV vaccination
- ❖ Stated that their patients don't receive the HPV vaccine on the same as a provider recommendation

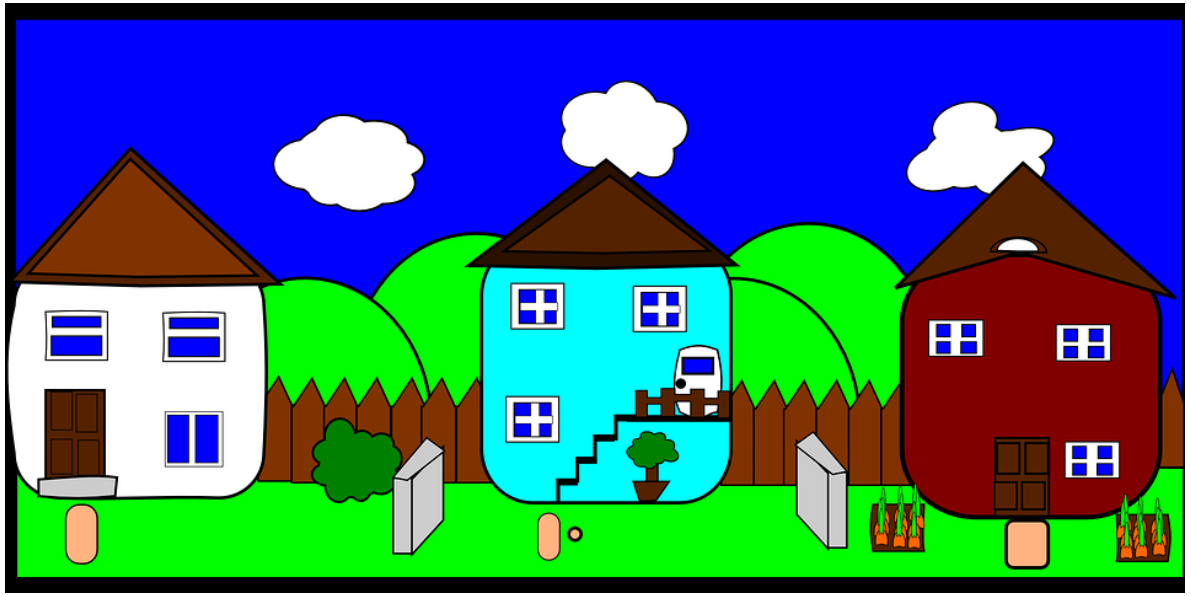
Table 3. Summary tables for average scores (challenge, knowledge, and recommendation) by rural/urban

	Urban		Rural		P$
	N	Mean (95%CI)	N	Mean (95%CI)	
Number of challenges that limits HPV vaccination (Max: 16)	25	0.80 (0.25 - 1.35)	52	1.90 (1.44 - 2.37)	0.001
Overall knowledge score about HPV Vaccination (Max:47) [a]	25	34.44 (30.74 - 38.14)	52	35.77 (33.89 - 37.65)	0.6748
HPV recommendation practices (Max:12) [b]	25	8.88 (7.26 - 10.49)	52	8.65 (7.51 - 9.80)	0.907
Tendency patients get HPV vaccination the same day following recommendation by provider (Max: 4)[c]	25	2.64 (2.07 - 3.21)	52	1.94 (1.61 - 2.27)	0.0103

[a] Higher score indicates higher knowledge about HPV vaccination. The maximum score is 47 when a provider has right answers in all questions.
[b] Higher score indicates higher recommendation practices for the HPV vaccination. The maximum score is 12 when a provider almost always recommends HPV vaccination.
[c] Higher score indicates higher frequency of HPV vaccination the same day after recommendation. The maximum score is 4 when patients almost always get the HPV vaccination the same day after recommendation.
$ Wilcoxon rank-sum test

More research needed on suburban barriers

- Provider and healthcare system level factors
- Higher levels of vaccine hesitancy among parents
- Parent and caregiver/attitudes of adolescent patients about HPV vaccination specifically
- Bundling practices with other adolescent immunizations
- Perceptions as a needed or necessary vaccine



Quality Improvement Trainings

Discussed:

- ❖Current HPV practices
- ❖Standing orders
- ❖Financial barriers
- ❖Quality improvement programs

Goal: Train providers, MA's, nurses, and other clinic staff on **evidence-based strategies** to improve HPV vaccination in their clinic and actions they can take

- ❖Short and long term goal sheet
- ❖Three-month follow-up on their progress

Participant Responses

- "I have been better at asking the 18 and older. My mind is more aware of it. Still getting a lot of push back on HPV by the parents of younger kids. I was able to discuss and change one mother's thoughts! go me!"

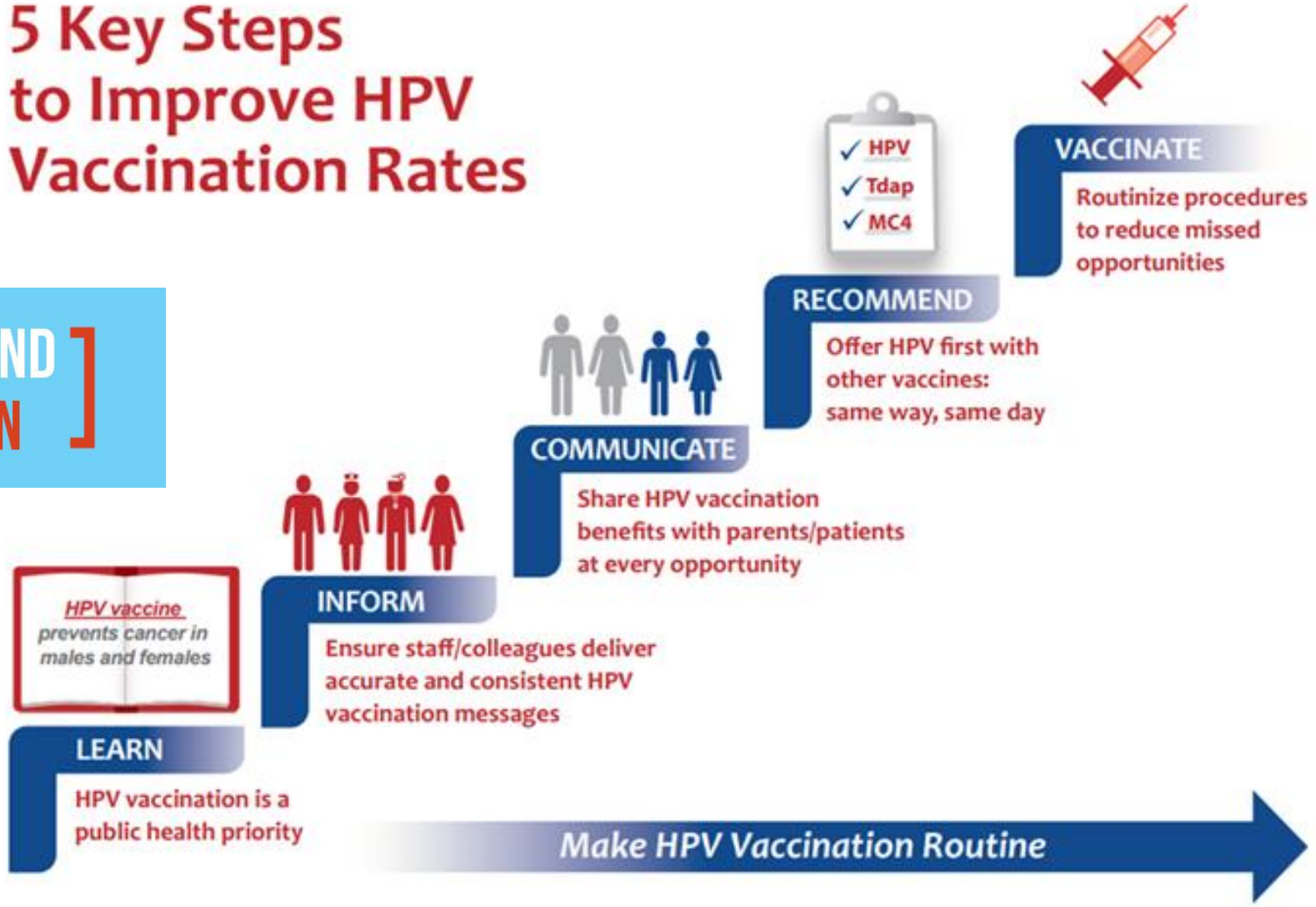
- "…Many of our patients aren't questioning the HPV vaccine now that we have changed the way we are approaching the idea and explaining what vaccines are needed-whether required by school or not. This has helped complete some of those who just needed to complete the series by giving the second shot."

- "I have found that my rewording of the HPV vaccination to my patients has really increased my amount of HPV vaccinations. I have found telling patients they are due for HPV along with the other immunizations I really have not had the parent question the vaccination and they just state ok and the ok all vaccinations be given."

Evidence Based Strategies to Improve HPV Vaccination

5 Key Steps to Improve HPV Vaccination Rates

[ROUTINELY RECOMMEND CANCER PREVENTION]



National Foundation for Infectious Diseases®

adolescentvaccination.org/hpv

Presumptive Recommendations

Announcement method:

- ❖Child is due for 3 vaccines recommended for children this age
- ❖Place HPV vaccine in the middle of the list
- ❖Assume parent will be receiving HPV vaccine at this visit for child

"JOE is due for tdap, HPV, and menactra TODAY…"

Standing Orders

- ❖Reduce missed opportunities
- ❖Helps alleviate workload demands on physicians
- ❖Trained medical staff able to efficiently deliver vaccines to age-eligible patients

HPV VACCINE
IS CANCER PREVENTION

Provider Prompts & Patient Reminder Systems

- Optimize electronic health records (EHR) to send patient reminders and give provider prompts
- Improve data collection by training staff on exactly what data to capture
- Connect to state's immunization information system (IIS)
- Establish patient reminder and recall systems

Plan-Do-Study-Act (PDSA) Cycles

- Establish systematic methods to regularly evaluate the ongoing success
- Possible end points of PDSA cycles:
  - Reduce missed opportunities
  - Raise age of data capture to 14
  - Capture first doses
  - Capture completion of series or up-to-date
- Give providers feedback on performance
- Utilize Immunization Info. Systems
- **CELEBRATE SUCCESS!**

Actions You Can Take

Establish an HPV Vaccination Clinic Champion

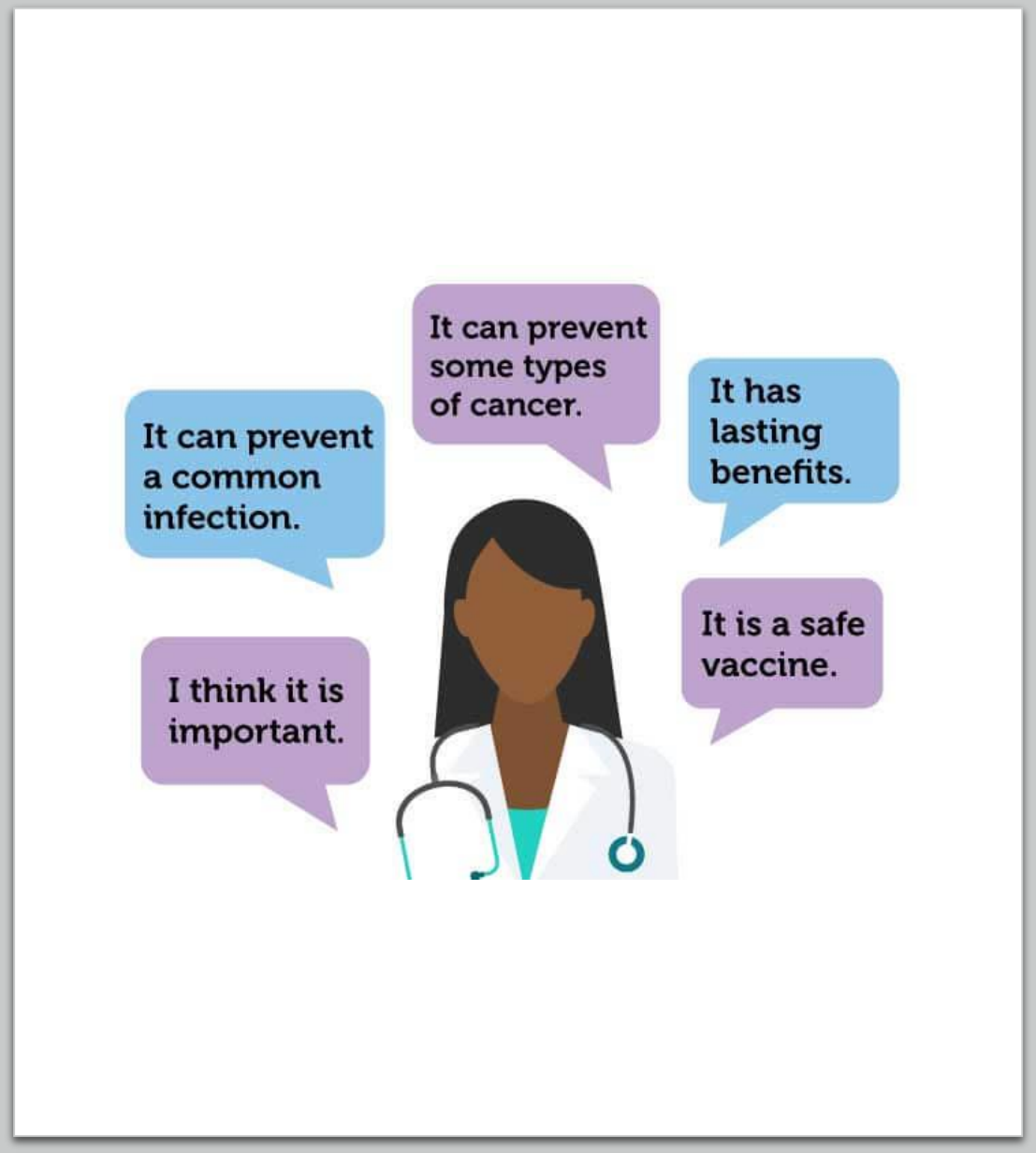
Minimize Missed Opportunities

Adopt Strategies to Reduce Financial Barriers

Evaluate, Sustain, and Celebrate Success

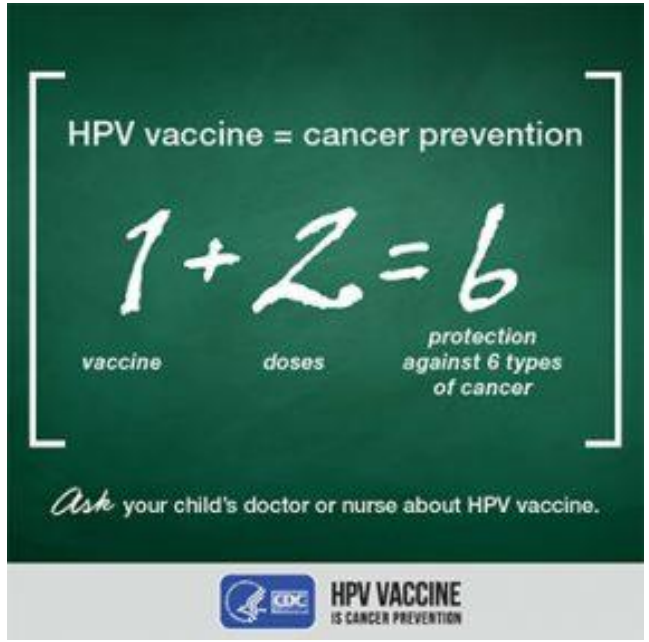
Future Areas of Research Needed

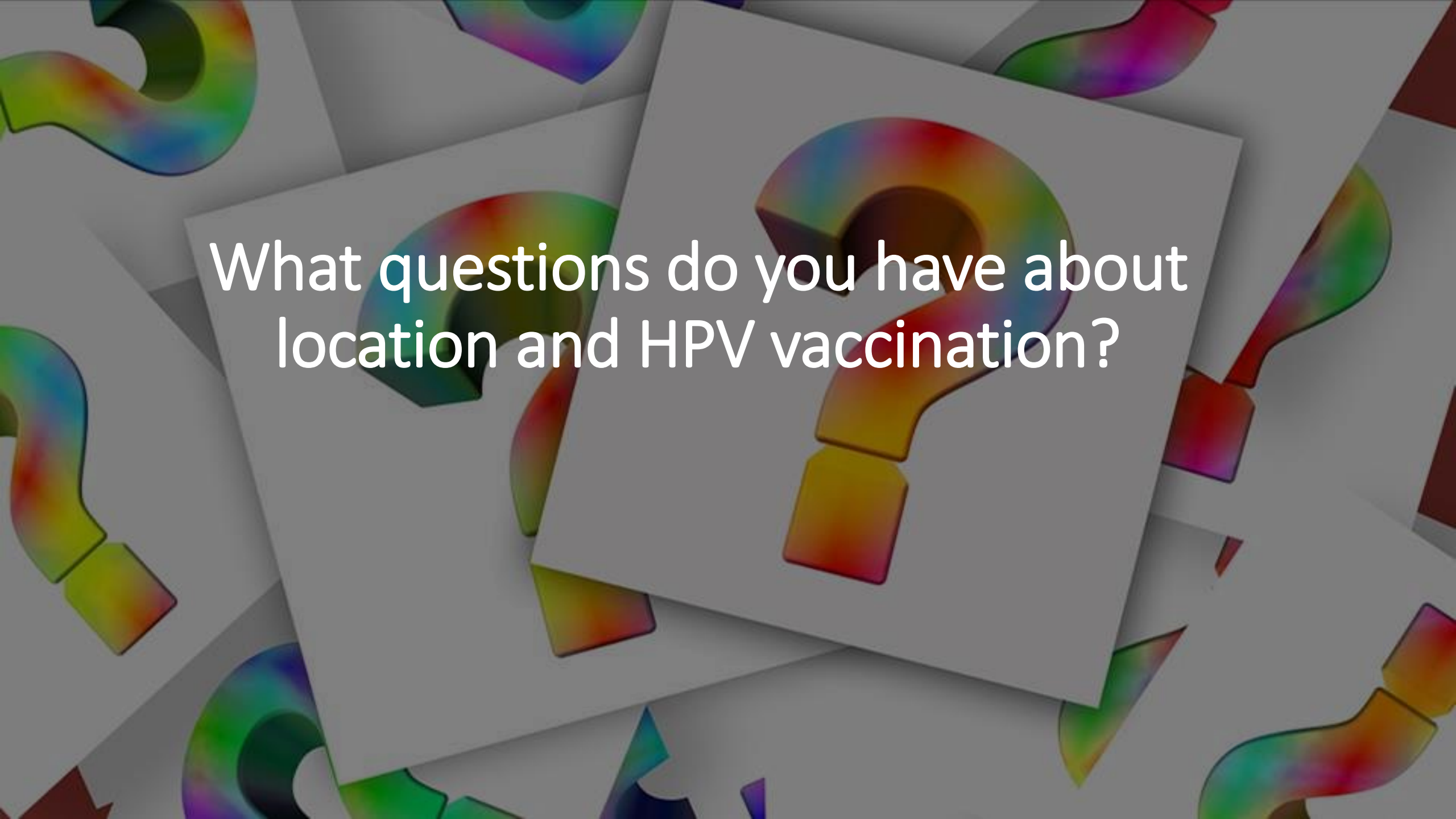
- **Targeted provider and healthcare team training** strategies for rural and suburban settings.
- **Characteristics of rural and suburban regions with lowest rates** of HPV vaccination for targeted interventions.
- Aside from a strong provider recommendation, do we need **different messages for parents in rural and suburban settings**?



Future Areas of Research Needed Continued

- How can we get **rural and suburban practices to own and prioritize HPV vaccination** quality improvement initiatives?
- In rural settings, how can we **improve access to the HPV vaccine and reduce costs** for small clinics?
- How do we **best monitor and celebrate improved HPV vaccination rates in small practices** with challenging EHR systems?




What questions do you have about location and HPV vaccination?

Improving HPV Vaccination Through a Diverse Multi-state Coalition

Intermountain West
HPV Vaccination Coalition

Mission:

"The Intermountain West HPV Vaccination Coalition brings together immunization program representatives with cancer control, pediatric, and primary care specialists as well as parents and community members who share the common goal of improving human papillomavirus (HPV) vaccination rates in our region."

Purpose & Vision

Goal:

To enhance and accelerate HPV vaccination among boys and girls ages 11-12

Objective:

To generate a coordinated plan and propose innovative strategies to address barriers to HPV vaccination

Vision:

To develop and enrich connections with existing immunization programs, cancer control coalitions, pediatric and primary care organizations, and relevant stakeholder communities

INTERMOUNTAIN WEST
HPV VACCINATION
COALITION

HUNTSMAN
CANCER INSTITUTE
UNIVERSITY OF UTAH

What we do:

Support HPV vaccination by striving to reach the **Healthy People 2020 goal of 80% vaccination**

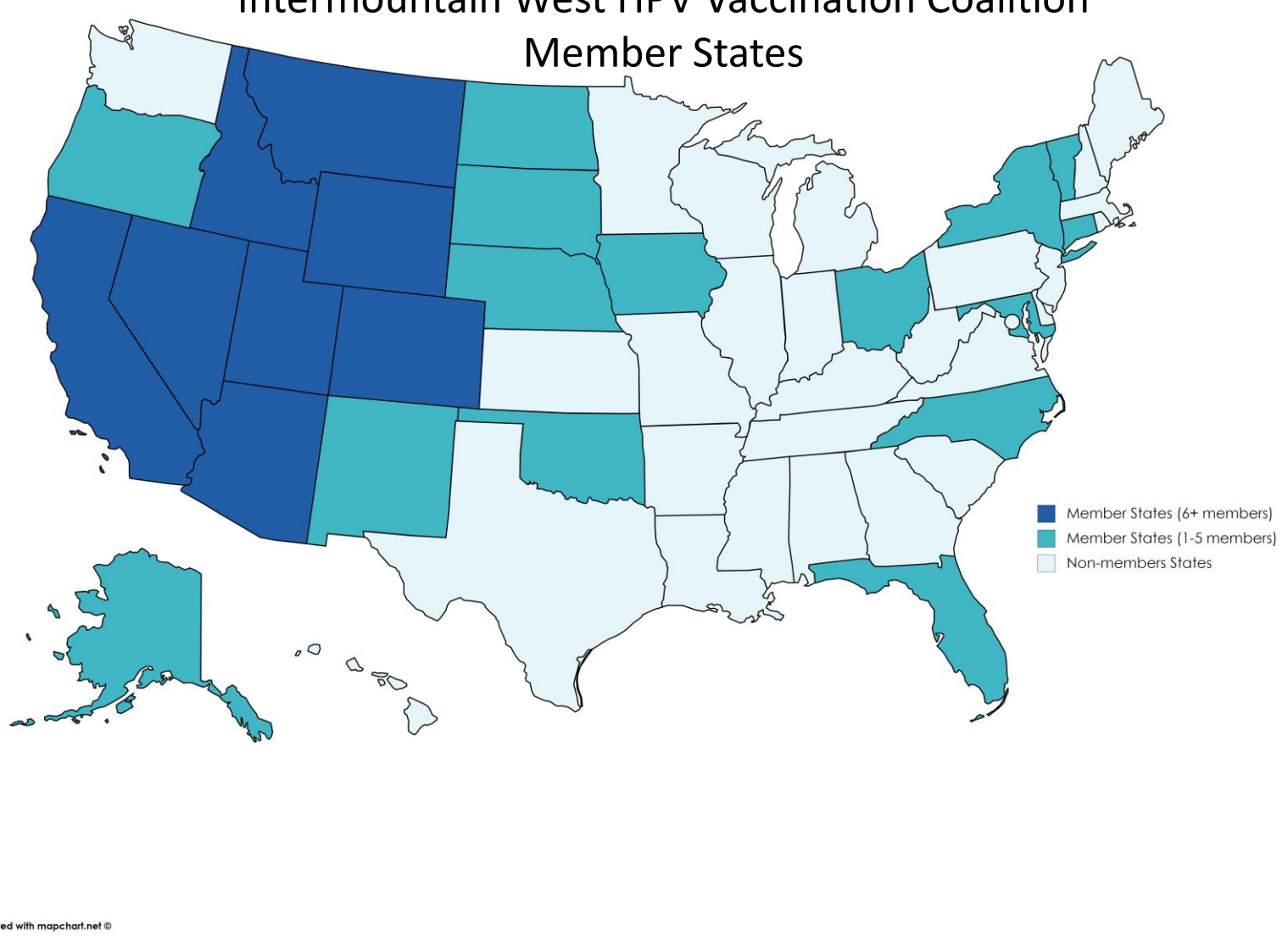
Activities:

- Email updates and news
- Monthly calls
  - Presenters include: Researchers, health departments, HPV survivors, American Cancer Society, etc.
- 2-3 in-person meetings annually
- HPV Advocate Program
- HPV Vaccine Education & Provider Training
- HPV Vaccination Health Services Research

Coalition Reach

INTERMOUNTAIN WEST
HPV VACCINATION COALITION

HUNTSMAN CANCER INSTITUTE
UNIVERSITY OF UTAH



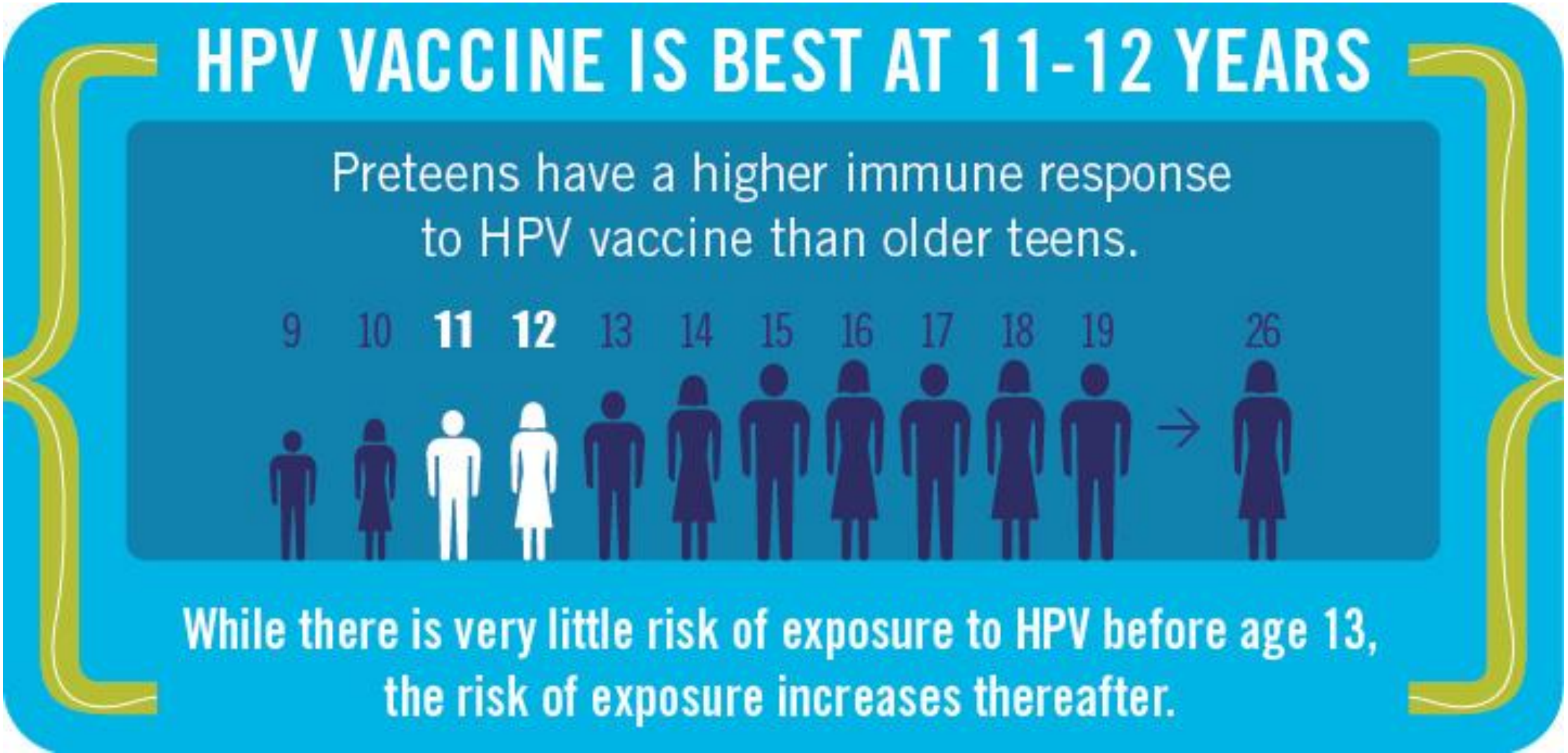
Who we are

2014:
Approximately 130 members
(3 states)

2019:
More than 400 members
(24 states, including 12 MW States)


HPV vaccine is cancer prevention.
Talk to the doctor about vaccinating your 11–12 year old sons and daughters against HPV.
#UCanStopHPV

Please remember



Deanna Kepka, PhD, MPH
Associate Professor
College of Nursing &
Huntsman Cancer Institute
Director, Intermountain West
HPV Vaccination Coalition
University of Utah
Office: 801.587.4565
deanna.kepka@hci.utah.edu

INTERMOUNTAIN WEST HPV VACCINATION COALITION

Thank you & Questions?